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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,442	09/21/2005	So Ik Bae	061063-0315051	3831
909	7590	06/27/2006	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102			AHMADI, MOHSEN	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/525,442	Applicant(s) BAE ET AL.	
	Examiner Mohsen Ahmadi	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/24/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02/24/2005</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

The application number 10/525,442 for a "Method of Eliminating Boron Contamination in Annealed Wafer" field 05/ 07/ 2003 has been examined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US Pat. 2002/0173173).

Regarding claim 1, Kobayashi et al. disclose a method for eliminating boron contamination in an annealed wafer, the method comprising, when annealing a silicon wafer having a surface on which a native oxide film has formed and is contaminated with boron deposited from an environment prior to the annealing (See page. 3 paragraph [0034]), carrying out heat treatment in a mixed gas atmosphere having ratio of hydrogen gas to an inert gas of 3% so as to remove the boron deposited from an environment from a surface of the wafer, followed by annealing in an inert gas atmosphere (See page. 3 paragraphs [0034-0040]) and also (See Figures 1 and 2).

Kobayashi et al. did not disclose the ratio of hydrogen gas to an inert gas of 5% to 100% as required by claim 1, instead Kobayashi et al. did disclose a ratio of 3% (See

page. 3 paragraph [0037]). With respect to the ratio of hydrogen gas to an inert gas that is required by claim 1, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to optimize the ratio of hydrogen gas to an inert gas. This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 195 USPQ 6, (CCPA 1977). The ratio amount of hydrogen gas to an inert gas is a matter of optimization and would be obvious to one of ordinary skill in the art.

Regarding claim 2, Kobayashi et al. disclose a heat treatment of the temperature in the mixed gas atmosphere is from 900 degree C to 1100 degree C (See page. 3 paragraph [0037]). With respect to the temperature that is required by claim 2, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to optimize the temperature. This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 195 USPQ 6, (CCPA 1977). The amount of temperature is a matter of optimization and would be obvious to one of ordinary skill in the art.

Regarding claims 3 and 4, Kobayashi et al. discloses a ratio of 3% (See page. 3 paragraph [0037]). However, Kobayashi et al. did not disclose the ratio of hydrogen gas to an inert gas of 10% to 30% as required by claims 3 and 4. With respect to the ratio of hydrogen gas to an inert gas that is required by claims 3 and 4, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to optimize

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the ratio of hydrogen gas to an inert gas. This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 195 USPQ 6, (CCPA 1977). The ratio amount of hydrogen gas to an inert gas is a matter of optimization and would be obvious to one of ordinary skill in the art.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohsen Ahmadi whose telephone number is 1-571-272-5062. The examiner can normally be reached on Mon-Fri 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 1-571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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06/08/2006


MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER